



TRADITIONAL FOOD PRESERVATION METHODS AND ITS SIGNIFICANCE: A STUDY AMONG THE BODO COMMUNITY OF KOKRAJHAR DISTRICT, ASSAM

Dhira Mani Das¹, Dr Kh. Narendra Singh²

¹ Research Scholar, Department of Anthropology, Assam University Diphu Campus, Karbi Anglong, Assam

² Professor, Department of Anthropology, Assam University Diphu Campus, Karbi Anglong, Assam

ABSTRACT

The Bodo community, an indigenous group living in Assam in the northeastern region of India, has developed unique methods to preserve food. These traditional methods of food preservation play a significant role in maintaining the cultural identity of the community. The present paper attempts to explore various food preservation methods practiced by the Bodo community, such as sun-drying, smoking, fermentation, and pickling. The paper also focuses on examining the cultural and nutritional significance of these food preservation practices, and the challenges faced by the Bodo community in maintaining these traditional practices in the face of changing lifestyles and environmental conditions. By acknowledging these challenges, one can work towards finding solutions that allow the Bodo people to continue their age-old food preservation methods while adapting to modern realities.

KEYWORDS: Bodo, Food Preservation, Fermentation, Sustainability, Lifestyle, Cultural Identity.

INTRODUCTION

The Bodo are the largest indigenous tribe of Assam, mainly living in the north region of the Brahmaputra. They have a rich history that goes back to centuries. Food is a crucial necessity for human survival, taking precedence over other activities essential for staying alive. The methods used to obtain food must ensure a proper balance of nutrients all year round and in different environmental conditions. These food acquisition practices play a significant role in shaping various aspects of a society, including community size, settlement stability, economic structure, inequality levels, political systems, artistic expressions, and religious beliefs and rituals (Ember & Ember, 2012).

The food habits of the Bodos were described by Endle as being more varied and unrestricted compared to their Hindu and Muslim neighbours. This freedom in food choices is believed to contribute to their impressive physical stature (Endle, 2010). They utilize traditional methods to prepare and conserve food using natural resources like forests, jungles, ponds, and rivers. The Bodo people have a preference for non-vegetarian fare such as pork, chicken, mutton, and fish, alongside leafy greens. Initially dependent on foraging for food, they transitioned to agriculture and animal husbandry over time, also mastering food preservation for times of scarcity.

Food customs vary greatly among societies worldwide, even among those with similar cultural backgrounds. Food preparation, consumption, and storage practices reflect the socio-cultural fabric of a community, serving as a symbol of their heritage and embodying traditional knowledge passed down through generations to preserve ethnic identity (Britwum & Demont, 2022).

Food preservation techniques are essential for upholding the quality, safety, and accessibility of food all year round. This overview emphasizes the importance of various methods of food preservation in guaranteeing food security and safety. Initially, these methods help prolong the lifespan of perishable food items, preventing spoilage and minimizing food wastage. Approaches like canning, freezing, and drying hinder the growth of harmful microorganisms and enzymes that lead to food spoilage, thereby maintaining the nutritional value and taste (Sharma, 2024).

Secondly, food preservation allows for the storage and distribution of seasonal produce beyond its usual harvest time, ensuring a steady food supply. This is particularly crucial in areas with seasonal food availability fluctuations or during emergencies like natural disasters or conflicts, where access to fresh food may be scarce. Food preservation methods aid in enhancing food safety by lessening the risk of foodborne diseases. Properly preserved foods go through procedures that either eliminate or inhibit pathogens, making them safer for consumption. Food preservation also promotes economic stability by facilitating the marketing and trade of food products outside their immediate production season (Boro and Bhattacharjee, 2020). This helps sustain agricultural livelihoods and encourages growth in the food industry by supporting value-added food items. Furthermore, these methods bring convenience to consumers by offering a wide range of food options all year long. Preserved ready-to-eat foods require minimal preparation, making them convenient choices for busy lifestyles (Narzary, 2016).

This paper aims to explore the traditional food preservation methods of the Bodo community. By examining the techniques used by the Bodo people to preserve food; this study seeks

to shed light on their cultural practices and sustainable food storage methods. Through a detailed analysis of these preservation methods, the paper highlights the importance of preserving food in traditional ways and discusses the potential applications and challenges faced by the Bodo community in maintaining these practices.

OBJECTIVES OF STUDY

The primary goal of food preservation within the Bodo community is to guarantee food security, prolong the lifespan of perishable food items, and uphold food quality, particularly during times of scarcity or when specific foods are not in season. This practice assists in meeting their dietary requirements and preserving cultural traditions all year round. This paper tries to focus on the various methods of food preservation transmitted from generation to generation and how the preservation of foods helps their economy and how globalization and modernization affect their traditional way of life is also covered.

STUDY AREA AND THE PEOPLE

The study is based on traditional food preservation methods of Bodos of Kokrajhar district under the Bodoland Territorial Area District (BTAD), Assam. The study area mainly covers different villages under Gossaigaon Block and Kasugaon Block which are mainly dominated by the Bodo community. For the present study, Bodo indigenous people are selected. The Bodo community, a prominent Scheduled Tribe within north-eastern India, is considered the indigenous people of Assam. They are known by various names in different regions, such as Kiratas Mache (Mech), Kocharis, Bodo, or Boro. As a linguistic group, the Boros are part of the Tibeto-Burman sublanguage family and reside alongside the Mongolian descent. Rev. S. Endle discussed the Kachari race's origins, noting the lack of concrete historical evidence. However, their physical traits closely resemble the Mongolian type, suggesting a likely origin in Tibet or China (Endle 2010).

MATERIALS AND METHODS

Data was collected using questionnaires, focus groups, and interview guides which were procedures for data collection. The observation method was used to study and understand the food traditions of the participants relevant to the thesis. Bodo people have different methods of preparing their food. Individual interviews were also handed to each household door to door in remote villages and secondary sources, books, local magazines, journals, etc. were used. For many years, the culture of the old people; ancestral food habits has been narrated by the old people.

RESULTS AND DISCUSSION

The Bodo community continues to uphold traditional methods of food preservation, both with and without alterations. The preserved food items hold not only nutritional value but also play a significant role in the socio-cultural fabric of the Bodo people.

Traditional Methods of Dried Fish Preservation among the Bodo People

The Bodo people possess a vibrant cultural background that

encompasses traditional fish preservation techniques. One such prevalent practice among them is the preservation of fish by drying. The dried fish known as *Na Gwran* in Bodo is obtained by drying up various types of mainly small fishes. The Kacharis cherish *Na Gwran* (dried fish) as one of their delicacies, sourcing fishes from rivers and sun-drying them for consumption. The dried fish is greatly praised by the Kachari as a welcomed and delicious addition to their somewhat boring daily food (Endle, 2010). This method allows them to store fish for prolonged durations, especially when fresh fish is scarce. Here are some of the traditional methods of fish drying practiced by the Bodo people-

Sun Drying: Among the Bodo people, sun drying stands as one of the oldest and most widely used methods of fish preservation. Cleaned fish are laid out on clean mats or bamboo trays and exposed to direct sunlight for drying. Typically, the fish are positioned in an open area to maximize sunlight exposure and airflow. This process aids in eliminating moisture from the fish, thus preventing the growth of spoilage inducing bacteria and fungi. The duration of sun drying varies based on factors such as fish size and sunlight intensity, often spanning several days.

Smoking: Another popular preservation method among the Bodo people is smoking. Traditionally, they utilize a basic technique involving suspending fish over a low-temperature fire created from wood or other appropriate materials. The resulting smoke helps in both drying and flavouring the fish while also acting as a preservative by hindering the proliferation of microorganisms. Additionally, the smoking process imparts a distinctive smoky taste highly valued in various cuisines.

Salting: Salting is commonly employed method by Bodo community to preserve fish over extended periods. Cleaned fish are coated with salt, either by rubbing it directly onto the fish or immersing them in a concentrated salt solution. The salt draws out moisture from the fish, establishing an environment unfavourable for bacteria and other spoilage-causing organisms. Once salted, the fish are typically left to dry either under the sun or in a well-ventilated area. Depending on the salting intensity and storage conditions, salted fish can be stored for months to a year.

Fermentation: An age-old technique of fish preservation, fermentation, is practiced by many indigenous groups, including the Bodo people. In this method, cleaned fish are combined with salt and occasionally spices or herbs. The resulting mixture is tightly packed in containers like earthenware pots or bamboo baskets and left to ferment for a period, usually spanning days to weeks. During fermentation, beneficial bacteria and enzymes break down proteins and carbohydrates in the fish, resulting in a tangy and flavourful outcome (Narzary et al., 2021). The acidity produced in this process aids in fish preservation by inhibiting harmful bacterial growth.

Drying with Ash: This technique involve covering the cleaned fish with wood ash in preparation for drying. The ash serves as a drying agent, aiding in the removal of moisture from the fish while preventing the growth of bacteria and fungi. Once

coated in ash, the fish are left to dry in sunlight or over a gentle flame. Once fully dried, the ash residue can be removed before consumption.

These age-old methods of preserving dried fish have been handed down through generations within the Bodo community, remaining a significant aspect of their culinary history. Despite the increasing adoption of modern preservation methods, these traditional techniques are crucial for safeguarding cultural heritage and upholding the ties to the land and heritage of the Bodo people.

Traditional Methods of Meat Preservation

Traditional methods of preserving meat among the Bodo community are tailored to suit their local environment and cultural traditions. While these methods might vary across different Bodo groups, here are some common traditional methods they employ for meat preservation:

Smoking: Smoking is a popular meat preservation method among the Bodo people. Meat is cut into thin strips or pieces and hung over a slow-burning fire, usually fuelled by hardwood, to create smoke. The smoke dehydrates the meat and imparts a smoky flavour while inhibiting the growth of spoilage-causing microorganisms. Smoking also helps prevent insects from infesting the meat.

Sun Drying: Sun drying is another traditional method used to preserve meat. Meat is cut into thin slices and laid out on bamboo mats or racks in direct sunlight. The heat from the sun dries the meat, reducing its moisture content and making it less susceptible to spoilage. This method is often used during dry seasons when there is ample sunlight.

Salting: Salting is another effective way to preserve meat. This method involves coating the meat with salt, which eliminates moisture and creates an environment unsuitable for bacteria. The salt also aids in preventing the growth of microorganisms that lead to spoilage. The traditional Bodo approach may include rubbing the meat with salt and then storing it in a cool, dry place.

These traditional methods of meat preservation have been used by the Bodo people for generations, allowing them to store meat for extended periods without the need for modern refrigeration technology. These methods not only help to ensure food security but also contribute to the preservation of cultural heritage and traditional knowledge.

Traditional Methods of Vegetable Preservation

The Bodo community, much like other indigenous groups, has developed traditional techniques for preserving vegetables to ensure food security in times of scarcity or to prolong the lifespan of harvested crops. Here are a few traditional methods of vegetable preservation followed by the Bodo people:

Drying: Under the Sun: Sun drying is a commonly used method for vegetable preservation in various cultures worldwide, including the Bodo community. Vegetables like leafy greens,

beans, and peppers are sliced or diced and laid out in a single layer on clean surfaces or bamboo mats. These vegetables are then left to dry under the sun until they become crispy. Once dried, they can be stored in airtight containers for extended durations without spoiling. Sun drying aids in eliminating moisture from the vegetables, thus preventing the growth of bacteria and fungi that lead to the spoilage of food.

Fermentation: One method traditionally employed by the Bodo people to preserve vegetables is fermentation. Cabbage, bamboo shoots, and mustard greens are cut or shredded and then combined with salt or other fermenting substances in a container. As time passes, the natural beneficial bacteria found on the vegetables ferment the sugars and starches, leading to the production of lactic acid and other compounds. These substances aid in preserving the vegetables and imparting a tangy taste. Fermented vegetables can be kept for extended periods in cool, dark storage spaces.

Pickling: Another preservation technique utilized by the Bodo people is pickling. This method involves immersing vegetables in a mixture of vinegar, salt, and spices. The acidity of the vinegar helps prevent bacterial growth, while the salt assists in removing moisture from the vegetables. Traditional Bodo pickles may consist of various vegetables like cucumbers, carrots, and green chilies, along with local spices and herbs for enhanced flavor. Once pickled, vegetables can be stored in jars or ceramic pots for months or even years.

Stored in Sand: Some root vegetables like potatoes, sweet potatoes, garlic, and yams can be preserved by being stored in sand. Following the harvest, these vegetables are properly cleaned, dried, and then arranged in layers within containers filled with clean, dry sand. The sand serves to control moisture levels and acts as insulation, preventing the sprouting or rotting of the vegetables. When kept in a cool, dark location, vegetables can stay fresh for months using this technique.

Traditionally preserved major food items of the Bodo community:

The preparation and processing of traditional foods not only showcase ingenuity and the preservation of culinary customs but also contribute to continuous learning for the preservation of life and the environment holistically (Sing & Sing, 2007).

Napam: A traditional delicacy known as *Napam* originates from the Bodo community, an indigenous group mainly located in the north-eastern region of India, particularly in Assam. *Napam* is essentially a fermented fish dish, renowned for its robust taste and potent smell. The process of making *Napam* involves the following steps:

Fish Selection: The initial step is to choose the appropriate type of fish, typically small freshwater varieties like catfish or small carp.

Cleaning and Gutting: Once the fish is selected, it undergoes a thorough cleaning and gutting process to eliminate any impurities or undesirable parts.

Drying: Following the cleaning process, the fish is usually dried under the sun to eliminate excess moisture and aid in the preservation process. The drying duration may vary depending on weather conditions.

Fermentation: After adequate drying, the fish is placed in a container for natural fermentation, often supported by beneficial bacteria. This crucial phase can take from a few days to a couple of weeks, allowing the fish to develop its characteristic flavor and aroma.

Seasoning (Optional): Some variations of Napam may involve seasoning with spices such as chili peppers, garlic, ginger, and indigenous herbs to enhance the flavor.

Storage: Once the fermentation is complete, Napam is ready for storage in bamboo pipes, which are sealed, airtight containers or jars to prevent spoilage and maintain its flavor.

Napam is commonly served as a side dish or condiment in Bodo cuisine. Despite its strong smell, it is highly esteemed in the region. It is important to note that the exact method of preparing *Napam* may slightly differ between households, each preserving its own traditional recipe and techniques passed down through generations. In the instance of *Napam*, fermentation not only serves to preserve the fish but also alters its flavour, turning it into a cherished delicacy within the Bodo culinary heritage. The minimum duration for *Napam* preservation is at least one month, while the maximum duration could extend to three years or beyond. Based on the findings of Bhaben Narzi and Kameswar Brahma, it is feasible to store *Napam* for a period of two to three years (Narzi, 2011 and Brahma, 1992). It is commonly accepted that longer preservation duration yields a *Napam* of superior quality and taste. The flavor and excellence of *Napam* are directly influenced by how long it is preserved. The tradition of *Napam* preservation persists within the Bodo community, although presently, some individuals nowadays store *Napam* in glass containers.

Dried Jute leaves (Narzi Gwran) preservation methods:

Narzi Gwran refers to dried jute leaves, a traditional food staple among the Bodo community, known as *Narzi Wngkri*. The process of creating *Narzi Gwran* is straightforward: initially, fresh jute leaves are collected and dried in the sun for a few days until needed. Once fully dried, they are stored in a container or bag. To protect them from insects and other potential damage, the bag containing the jute leaves is hung above the kitchen hearth to be exposed to smoke, which acts as a deterrent against pests and fungi. The dried jute leaves, or *Narzi Gwran*, can be preserved for extended periods, sometimes even years, but are disposed of if a family member passes away. During this period of mourning, the deceased's family refrains from consuming dishes made with *Narzi Gwran* for a year.

Dried radish (Mula Gwran) preservation methods:

Mula Gwran represents another traditional food product of the Bodo community, crafted from radishes. To begin making *Mula Gwran*, mature radishes are carefully gathered and washed

thoroughly with water. Following this, the cleaned radishes are sliced into small pieces and exposed to sunlight in a *Sandanga* (Large Sieve) or *Sandri* (Sieve) for several days until they are completely dried. Subsequently, the dried radish pieces are smoked over the fire for approximately thirty minutes as the third step. The fourth step involves allowing the smoked radish pieces to sit out overnight to absorb moisture. In the morning, they are once again placed in the sunlight to eliminate any remaining moisture from the sliced radishes. The sixth step entails storing the dried radish pieces in bamboo containers or earthen pots to preserve them for consumption during times of scarcity. Presently, people opt to use bottles for preservation instead of traditional bamboo pipes or earthen pots. In case any signs of spoilage due to insects or fungi are detected in the preserved *Mula Gwran*, immediate exposure to sunlight is required to prevent further deterioration.

Traditional alkali (Kardwi) preservation methods:

Traditionally, the indigenous alkali known as *Kardwi* in Bodo is prepared using ingredients like *Besor* (mustard), *Sibling* (black gram), *Sobai* (pulses), *Talir Posla Gwran* (dried banana stems), *Owa Swikwnda Bibu* (remains of split bamboo), and *Katri Pipang* (wild turmeric plant) that are dried under the sun. The dried plants intended for *Kardwi* are burnt to ash, sifted with a *Sandri* (sieve) to remove any unburned or undesirable elements, and then stored either as cakes or directly in bamboo containers. To create the cakes, the ashes are mixed with a small amount of water and dried in the sun. It is affirmed that the *Kardwi* which is made from the ashes of mustard, black gram, banana roots, and sesame is to be considered the best (Baro, 2016).

Kardwi, derived from the ashes of mustard, black gram, and sesame, holds a special place as a valuable traditional element in certain cooking traditions, particularly among the Bodo community. Here are the reasons for its importance:

Cultural Significance: *Kardwi* is culturally significant in Bodo traditions, utilized in various rituals, ceremonies, and customary practices. It serves not only as a cooking component but also carries symbolic and ritualistic meaning.

Nutritional Value: Mustard, black gram, and sesame are nutritious ingredients, packed with vitamins, minerals, and protein. The ash produced from burning these ingredients may contain essential minerals and beneficial compounds, adding nutritional value to dishes.

Enhancing Flavor: The ash from these ingredients can introduce a distinct flavour profile to dishes, elevating their taste and aroma. This flavour enhancement plays a role in enhancing the overall appeal of traditional Bodo cuisine.

Preservation: Employing ash in cooking can sometimes serve as a natural preservative, extending the shelf life of certain foods. This preservation method can be crucial in traditional environments where refrigeration might not be easily accessible.

Health Benefits: While further research is required, some

traditional practices incorporate ash for potential health benefits. Certain types of ash are thought to possess alkalizing properties that aid in digestion and other health conditions, although these assertions should be cautiously considered and supported by scientific studies.

It is important to recognize that the significance of *Kardwi* and its use can vary across regions and communities. Furthermore, while traditional practices are cherished for their cultural heritage, it is essential to uphold food safety standards, especially when utilizing unconventional ingredients like ash. In Bodo cuisine, there is a variety of alkaline curries that include *Wngkhri Gwbab*, *Sobai Khari*, *Narzi Khari*, *Onla Kharwi Dao Bador* (chicken with rice powder alkaline curry), *Dao Bador Sobai Kharwi* (chicken curry with lentil alkaline), *Oua Mewai Dao Onla* (chicken with bamboo shoot and rice powder curry), *Ongkhriwbab* (alkaline curry), *Narji Gwbab* (dry alkaline curry with bitter leaves), *Moithru Na Kharwi* (papaya fish curry), *Khumbra Gwran Onla* (dry white gourd alkaline with rice powder), *Khumbra Kharwi* (white gourd alkaline curry), and more.

FOOD PRESERVATION SYSTEM OF BODOS: PAST, PRESENT, AND FUTURE PROSPECTS

The Bodo community, like many indigenous groups, has adapted its food preservation practices over time by blending traditional methods with modern techniques. By examining the historical, present, and potential future aspects of food preservation among the Bodo people:

Historical perspectives: The Bodo, among others, relied on natural preservation techniques. Methods such as sun drying, smoking, and fermentation were commonly used to preserve meats, fish, and vegetables. Salt preservation was also prevalent, especially for fish and meat. Preservation practices were intertwined with local ingredients and cultural traditions, ensuring the effectiveness and sustainability of the methods employed. Natural resources like bamboo, banana leaves, and clay pots were utilized for food preservation.

Current practices: With technological advancements and improved access to modern preservation methods, the Bodo community has incorporated new techniques alongside traditional ones. Introduction of refrigeration for preserving perishable foods for a long time and methods like canning, vacuum sealing, and freezing have gained popularity for preserving fruits, vegetables, and meats.

Commercialization and market integration: Some traditional preservation practices have transitioned into commercial activities, appealing to broader markets. The integration into markets has provided economic opportunities to the community but has also raised concerns about cultural heritage preservation.

Future outlook: There is a growing recognition of sustainable food preservation practices for environmental and cultural conservation. Future trends might involve a revival or enhancement of traditional preservation methods that are environmentally friendly and aligned with cultural values.

Technological advancements: Continuous progress in food preservation technology could offer more effective and sustainable methods. Exploration of solar-powered refrigeration, low-energy consumption techniques, and eco-friendly packaging could influence the future of food preservation among the Bodo people.

SIGNIFICANCE OF FOOD PRESERVATION

Preserving traditional knowledge and practices amidst rapid modernization is crucial. Initiatives focused on documenting and passing down traditional preservation methods to younger generations can help uphold cultural identity and food sovereignty. Encouraging community engagement in decision-making regarding food preservation practices can ensure that any changes or advancements align with cultural values and local needs.

The evolution of the Bodo community's food preservation system from traditional methods to a blend of modern techniques reflects shifts in technology, market integration, and cultural dynamics. Looking ahead, sustainable practices, technological progress, and endeavours to safeguard cultural heritage will define the future of food preservation among the Bodo people. Food preservation plays a crucial role in the social and cultural fabric of tribal communities for various reasons. These are as follows-

Ensuring Food Security: Many tribal groups have developed food preservation methods like drying, smoking, salting, and fermentation to guarantee food security. These techniques enable them to store excess food in times of plenty for consumption during scarcities such as droughts or harsh winters.

Preserving Cultural Identity: Food preservation practices are deeply intertwined with the cultural heritage of tribal societies. The knowledge, traditions, and customs associated with preserving food are handed down through generations, reinforcing cultural identity and maintaining a connection with the past.

Fostering Community Bonds: The communal aspect of food preservation involves collaborative efforts where tribe members come together to harvest, prepare, and store food. These activities strengthen social ties within the community, creating opportunities for storytelling, knowledge sharing, and the continuation of traditional methods.

Supporting Economic Livelihood: Food preservation techniques not only serve as a means of subsistence, but also offer economic benefits for indigenous communities. Products like dried meat, smoked fish, pickled vegetables, and fermented goods can be traded or sold in local markets, providing financial opportunities for tribal members.

Promoting Environmental Sustainability: Traditional food preservation methods often prioritize environmental sustainability by utilizing natural processes and local resources. By minimizing reliance on energy-intensive or chemically-

laden preservation techniques, tribal communities contribute to the preservation of local ecosystems and biodiversity.

Ceremonial and Ritual Significance: Certain preserved foods hold special ceremonial or ritual importance in tribal cultures. For instance, fermented beverages might be used in religious ceremonies, while preserved meats or fruits could be presented as gifts during significant social events or festivals.

Adapting to Environmental Challenges: Tribal communities residing in remote or harsh environments where fresh food access is limited rely on food preservation to adapt to their surroundings. This approach allows them to maximize seasonal abundance and make the most of locally available resources.

In essence, food preservation serves as a multifaceted cornerstone in tribal communities, encompassing elements of food security, cultural identity, social cohesion, economic sustenance, environmental responsibility, ceremonial customs, and health and nutrition. These practices underscore the resilience and resourcefulness of indigenous cultures in adapting to their environments while safeguarding their heritage and traditions.

CONCLUSION

It has been demonstrated that certain types of preserved food are essential components of specific religious ceremonies, rituals, and seasonal festivities; without them, these events cannot be properly carried out. The act of food preservation remains a prevalent custom, with the preserved items continuing to hold significance in traditional practices. The knowledge of preservation techniques has been passed down through generations, with the Bodo still adhering to traditional methods, sometimes with minor adaptations. In conclusion, food preservation techniques are crucial in upholding food security, safety, and availability globally. By extending the shelf life, ensuring food safety, promoting economic stability, and providing consumer convenience, these methods significantly contribute to the sustainable development of food systems worldwide. Continued research and innovation in food preservation will further boost its significance in addressing current and future food-related challenges. The traditional food preservation methods of the Bodo community provide valuable insights into sustainable living and cultural preservation. By appreciating and learning from these practices, one can promote environmental conservation and respect for indigenous knowledge.

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